

ABSTRACT

An electron source has an anode and a cathode that is capable of being negatively biased relative to the anode, the cathode having an electron emitting portion and a cathode axis. An electromagnetic radiation source is adapted to generate an electromagnetic radiation beam to heat the cathode. A lens is adapted to direct the electromagnetic radiation beam onto the cathode, the lens having a lens axis that forms an acute angle with, or is substantially parallel to, the cathode axis of the electron emitting portion.

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